Doc Code: AP.PRE.REQ

PTO/SB/33 (07/05)
Approved for use through xx/xx/200x. OMB 0651-00xx
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)
200309576-1

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR

on 01/26/2007

Signature /Jamie Cameron/

Typed or printed name Jamie Cameron

Application Number	Filed
10/694,302	10/27/2003

First Named Inventor: Douglas Vincent Larson

Art Unit	Examiner
2186	Pierre Miche Bataille

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96)

☑ attorney or agent of record.
Registration number 45,549

☐ attorney or agent acting under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34 _____

/Kyle J. Way/
Signature

Kyle J. Way
Typed or printed name

(720) 562-2283
Telephone number

01/26/2007
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☑ *Total of 1 forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Tradeamrk Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Practitioner's Docket No. 200309576-1 *PATENT*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Douglas Vincent Larson et al. Confirmation No.: 3575
Application No.: 10/694,302 Group No.: 2186
Filed: 10-27-2003 Examiner: Pierre Miche Bataille
For: METHOD AND PROGRAM PRODUCT FOR AVOIDING CACHE CONGESTION BY OFFSETTING ADDRESSES WHILE ALLOCATING MEMORY

Mailstop: AF
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Introductory Comments

In response to the final Office action dated October 27, 2006 (hereinafter "the final Office action"), the Assignee requests review of the final rejection in the above-identified application. No amendments are being filed with this request. A Notice of Appeal under 37 C.F.R. § 41.31(a)(1) is being filed herewith. The review is requested for the reasons set forth in the following remarks.

Remarks

Claims 1-10 were canceled in a previous response. Claims 11-13 remain pending and currently stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,804,761 to Chen et al. (hereinafter "Chen"). (Page 3 of the final Office action.) The Assignee respectfully disagrees, and believes such allegations represent clear error in establishing a *prima facie* rejection under 35 U.S.C. § 102. The Assignee thus respectfully requests review of the rejection for at least the following reasons.

Sole independent method claim 1 is reproduced below for convenience, with emphasis supplied:

> 11. A method of dynamically allocating memory of a computer system operable when a program running on the computer system requests allocation of a requested memory block from a memory pool comprising steps of:
>
> *testing a size of the requested memory block to determine if the size is representable as N times two raised to the power M times a cache line size of the computer system, where N is an integer equal to or greater than 1, and M is an integer greater than one*; and, if the size of the requested memory block is so representable, further comprising:
>
> *determining a spacer size determined as a random spacer size within a predetermined range of allowable spacer size,*
>
> *reserving a spacer block of memory from the memory pool, the spacer block being of the spacer size*; and
>
> allocating the memory block, adjacent to the spacer block, from the memory pool.

Generally, Chen describes a "chunk manager," which is software "used to manage chunk memory allocation from an operating system to an application." (Column 1, lines 31 and 32.) More specifically, "[t]he chunk manager allocates large blocks of memory chunks and then subdivides the blocks into smaller fixed size blocks (chunk elements) that can be used for fixed size data structures." (Column 1, lines 32-36.) The chunk manager specifically devised in Chen is "operable to receive a request from a computer program for a block of memory and modify the request such that the size of the requested memory block corresponds to a standard block size. The chunk manager is further operable to locate a first available block of memory having a size within a predefined range around the requested block size." (Column 2, lines 12-18.) Chen indicates that the use of such a chunk manager "helps to preserve larger blocks when smaller

sized blocks of memory are available, resulting in a *reduction in memory fragmentation.*" (Column 6, lines 28-33; emphasis supplied.)

As noted in the current application, the method of claim 11 is intended to avoid *cache congestion*, not reduce memory fragmentation. (See title.) In various embodiments, memory "spacers" may be allocated between other requested memory blocks "to help prevent hot spots in multiple blocks from mapping into the same cache sets." (Paragraph [0043].) Such hot spots may cause cache congestion, or "thrashing," in which often-requested data are repeatedly evicted from the cache to provide room for other often-requested data, thus resulting in inefficient cache operation. (See paragraphs [0014] and [0018].)

While claim 11 of the present application and the chunk manager of Chen both involve allocation of memory in response to memory requests, the similarities end there, due to the distinctly different goals of the two disclosures. As a result, the Assignee respectfully contends that the use of Chen in supporting an anticipation rejection of claims 11-13 represents clear error.

For example, the final Office action alleges that the function of the Chen "chunk manager to locate an available block of memory having a size within a predefined range around the requested block size" anticipates the claim 11 testing operation of the "size of a requested memory block to determine if the size is representable as N times two raised to the power of M [$N(2^M)$] times a cache line size of the computer system...." (Page 3 of the final Office action; emphasis supplied.) The Assignee respectfully disagrees with the allegation because *locating an available block of memory within a certain range of the requested block size* does not teach or suggest *testing if the size of the requested block itself is a particular value*, as is done in claim 11. In other words, locating an available block of memory falling with a certain size range, which is part of a memory allocation function, is not the same as determining if the requested block is of a particular size, which occurs before any allocation is even attempted in claim 11. Further, Chen does not teach or suggest the use of a cache line size in any calculation or test as is done in claim 11 since Chen appears to mention the possible existence of a cache memory only once (see column 3, line 59), and does not recognize the existence or importance of cache memory lines and their size.

The final Office action also indicates that the Chen chunk manager function of modifying a memory request so that the size of the requested memory block corresponds to a *standard block size* anticipates "determining a spacer sized determined as a *random spacer size* within a

predetermined range of allowable spacer size." (Page 3 of the final Office action; emphasis supplied.) The Assignee respectfully disagrees. For one, claim 11 does not provide for modification of any memory requests, much less to some standard block size. Further, use of standard requested block sizes would tend to work against the intent of claim 11, in which a memory spacer of some *random size* is allocated adjacent to the requested memory block. This functionality of claim 11 typically aids in preventing alignment of the various allocated memory blocks within the same cache sets to reduce cache congestion, while the use of standardized block sizes in Chen, such as "1 k, 3 k, 7 k, 10 k, 32 k, and 64 k" (column 5, lines 1-3), would likely *promote such alignment*, thereby exacerbating any cache congestion problems. At an even more basic level, Chen does not teach or suggest reservation of spacer memory blocks adjacent to allocated memory blocks at all, but instead discloses allocation of memory blocks of standard sizes without any spacer blocks adjacent thereto.

Thus, based on at least the foregoing, the Assignee contends that claim 11 is allowable in view of Chen, and such indication is respectfully requested.

Claims 12 and 13 depend from independent claim 11, thus incorporating the provisions of that claim. Therefore, the Assignee asserts that claims 12 and 13 are allowable for at least the reasons provided above in support of claim 11, and such indication is respectfully requested.

Therefore, in light of the above discussion, the Assignee respectfully requests that the 35 U.S.C. § 102 rejection of claims 11-13 be reversed

Conclusion

Based on the above remarks, the Assignee respectfully submits that claims 11-13 are allowable. Additional reasons in support of patentability exist, but such reasons are omitted in the interests of clarity and brevity. The Assignee thus respectfully requests reversal of the rejection of claim 11-13.

The Assignee hereby authorizes the Office to charge Deposit Account No. 08-2025 the appropriate fee under 37 C.F.R. § 41.20(b)(1) for the Notice of Appeal filed herewith. The Assignee believes no additional fees are due with respect to this filing. However, should the Office determine additional fees are necessary, the Office is hereby authorized to charge Deposit Account No. 08-2025.

Respectfully submitted,

Date: 1/26/07

SIGNATURE OF PRACTITIONER

Kyle J. Way, Reg. No. 45,549
Setter Roche LLP
Telephone: (720) 562-2283
E-mail: kyle@setterroche.com

Correspondence address:

CUSTOMER NO. 022879

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400